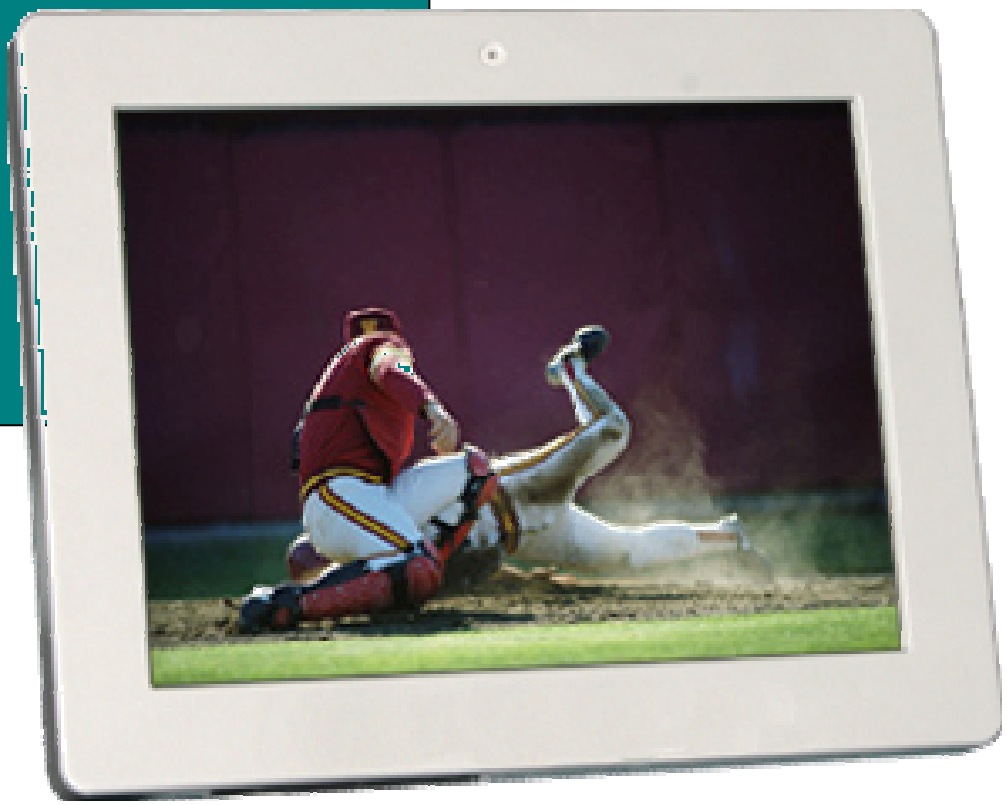
MDR-12 Ruggedized POI PC Display

User Manual

you + ROTEC



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Revisions

Revisions to the User's Manual are briefly listed here by index:

Index	Revision	Date	Author	Reason
00	First edit	8.12.2007	P. Walter	preliminary version

Preface

The purpose of this manual is to support the user during the installation, application, and modification of the hardware/software described in the following sections. The processes are explained from various technical aspects to simplify the individual steps.

In case of problems, it is helpful to try to identify the error in a reproducible way, and to compare the settings of all DIP switches, jumpers, and connector pin assignments, as well as all parameter settings (software), etc., with the specifications in this manual, **before** you call us.

The product you purchased is versatile and complex, and even a small oversight can affect overall performance.

Although the information in this document has been carefully reviewed, ROTEC does not warrant it to be free of errors or omissions. In this case, we apologize and would greatly appreciate correction proposals.

ROTEC reserves the right to make any changes to the hardware or software to improve functionality or simply operation. These changes will not be documented in all instances.

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This manual was written and printed by

ROTEC technology GmbH

Gutenbergstr. 15 * D-76437 Rastatt

☎ +49.7222 / 1008-0

Fax +49.7222 / 1008-10

Email: info@rotec.de

http://www.rotec.de

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1. Instruction

This manual will familiarize you with the installation and use of your Rotec MDR-12 display. Please take the time to read these instructions even if you are familiar with monitors and computers.

We have taken all possible care to ensure that this manual contains correct, accurate information. We reserve the right to make changes according to technical progress. However, the manufacturer cannot assume liability for any possible errors. In addition, the manufacturer cannot guarantee that the hardware will meet the purpose you require. We would appreciate reports of any errors, suggestions or criticism.

2. Important Safety Information

This section contains:

- Important safety information
- Battery information

This display has been tested for conformance to safety regulations and requirements, and has been certified for international use. Like any electronic device, however, the display should be used with care. To protect yourself from possible injury and to minimize the risk of damage to the display, read and follow these safety instructions.

General Guidelines

- Read all of these instructions.
- Save these instructions for later use.
- Follow all warnings and instructions marked on the display.
- Except as explained elsewhere in this manual, do not attempt to service the display yourself. Opening or removing covers might expose you to dangerous voltage points or other risks. Refer all servicing in marked compartments to service personnel.
- If for any reason the cabinet cover needs to be removed, then the instructions given in this manual must be closely followed.

Installation Restrictions

- Do not use the opened display near water.
- Do not place the display on an unstable cart, stand, or table. The display might fall and be seriously damaged.
- Do not block or cover the ventilation slots on the cover or cabinet of the display. Air must be allowed to circulate through these slots in order to ensure that the display operates properly and does not overheat.
- Install the display near an electrical outlet for ease of access. Use the plug on the power cord as the power disconnect device for the display. When your display is switched off, be aware that it still carries full line voltage, and consumes some electrical energy. To completely remove all voltages from the display and the auxiliary outlet, you must unplug the power cable from the wall outlet.
- Do not place the display near or over a radiator or heat register or in direct sunlight. Place the display in a small enclosure only if providing proper ventilation.
- To prevent fire, never place any type of candle or flames on the top or near the display.

- Do not permit anything to rest on the power cord. Do not locate the display where people can walk on its power cord.
- Do not plug the display into the same circuit with radio or television receivers.

Electrical Restrictions

- Use the plug that is provided with the display. If you are unable to insert the plug into the outlet, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the grounding-type plug.
- For international installation with a power source of 88-264 VAC, use a minimum 0.75 mm^2 PVC sheathed three-core flexible cord, type H05VV-F3G, with a green/yellow protective earthing conductor electrically connected to the protective earthing terminal within the equipment and connected to the protective earthing contact of the plug. The cable set should have safety approvals for the international installation and be marked HAR.
- For plugged equipment, the socket-outlet shall be installed near the equipment and shall be easily accessible.
- Operate the display from the type of power source indicated on the marking label. If you are unsure of the type of power available, consult your dealer or local power company.
- When your display is switched off, be aware that it still carries full line voltage. To completely remove all voltages from the display, you must unplug the power cable from the wall outlet.

Operating and Maintenance Guidelines

- Keep the area around the display free from static electricity and magnetic fields. Before you touch the display, discharge static electricity on your body by touching a metallic surface.
- Operate the display only when the cover is in the closed position.
- Do not turn the display on and off in rapid succession. Doing so might damage the configuration files and other data on the hard disk.
- Adjust only those controls that are covered by the operating instructions. Improper adjustment of other controls might result in damage and often requires extensive work by a qualified technician to restore the product to normal operation.
- Unplug the display and the monitor from the electrical outlet before cleaning. Clean the display and the monitor periodically with a damp cloth.
- Prepare the display before moving it by taking the following actions:
  - Disconnect the display and the monitor from the wall outlet.
  - Close the cabinet.
  - Disconnect external peripheral devices.
- Unplug the display from the wall outlet and refer servicing to qualified service personnel under any of the following conditions:
  - The cord or plug is damaged or frayed.
  - The display does not operate normally when the operating instructions are followed.
  - The display has been dropped or the cabinet has been damaged.
  - The display exhibits a distinct change in performance, indicating a need for service.

- The LCD panel used in this product is made of glass. Therefore, it can break when the product is dropped or applied with impact. Be careful not to be injured by broken glass pieces in case the LCD panel breaks. The LCD panel is a very high technology product giving you fine picture details. Occasionally, a few non-active pixels may appear on the screen as a fixed point of blue, green or red.
- When the MDR display is operated continuously for long hours, the residual image of a previous image may be observed. If a fixed image is displayed for a long period, this residual image may be observed permanently (image sticking).
  In order to prevent the fast development of image sticking, the following recommendations are suggested:
  - A fixed image should not be displayed for a long period; the image should be changed to other images with short cycles.
  - When the MDR display is not in use, please turn off the display.
  - When the MDR display is in idle, please use moving screen saver.

Battery Information

If the display has a battery that can be changed by the user, observe the following warning whenever you are handling the battery:

Warning!

Danger of explosion if battery is incorrectly replaced. The battery used in this device may present a fire or chemical burn hazard if mistreated.

Do not recharge, disassemble, heat above 100°C (212°F), or incinerate. Do not expose the contents of the battery cells to water.

Replace the battery with an approved battery only. Approved replacement batteries are available from your supplier. Use of another battery may present a risk of fire or explosion.

Dispose of the old battery according to local recycling regulations.

Note:

Do not dispose batteries. Please return batteries to your supplier to ensure recycling and disposal according to the legal regulations.

Note:

The batteries used for timer backup or similar purposes, do not contain cadmium or mercury compounds.

WARNING:
TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

CAUTION

RISK OF ELECTRIC SHOCK DO NOT OPEN

CAUTION:
TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK) NO USER SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

THIS SYMBOL INDICATES THAT DANGEROUS VOLTAGE CONSTITUTING A RISK OF ELECTRIC SHOCK IS PRESENT WITHIN THIS UNIT.

THIS SYMBOL INDICATES THAT THERE ARE IMPORTANT OPERATING AND MAINTENANCE INSTRUCTIONS IN THE LITERATURE ACCOMPANYING THE APPLIANCE.

3. Unpacking

Carefully take the display out of the packaging and make sure that all of the following components are included:

- MDR-12
- AC-Power Adapter (optional)
- This user manual
- Windows XP licence including CD (optional)

4. Wall mounting

The Rotec MDR display can be mounted and operated in vertical or in horizontal position. That means that you can hang the display either in “landscape” or in “portrait” orientation to the wall. The displayed picture can also be rotated to fit the desired orientation.

Attention:

For proper function of the display’s cooling system it is necessary that the distance of the backside of the display to the wall is minimum 20 mm (not necessary in case of fanless operation).

- Mount a mounting adapter with VESA 75/75 described in the manual of the mouning kit

5. Interfaces

5.1. Video-In

The Video-In Interface is realized using a Conexant CX23883 PCI Video Decoder, that provides depending on configuration four FBAS signal inputs (multiplexed on one A/D-Converter) or three FBAS and one S-Video input.

Note: The Video-In ist not available on the light version

5.2. PS/2 Keyboard

The keyboard uses I/O and IRQ resources. The BIOS allocates the resources during POST configuration. The resources are set to be compatible with common PC/AT settings. Use the BIOS setup to change some keyboard-related parameters.

5.3. PS/2 Mouse

The mouse uses I/O and IRQ resources. The BIOS allocates the resources during POST configuration. The resources are set to be compatible with common PC/AT settings. You can change some mouse-related parameters from the BIOS setup.

5.4. Serial Port 1 (COM1)

The serial-communication interface uses I/O and IRQ resources. The resources are allocated by the BIOS during POST configuration and are set to be compatible with common PC/AT settings. Use the BIOS setup to change some parameters that relate to the serial-communication interface.

5.5. Parallel Port (LPT1)

The parallel-communication interface uses I/O, IRQ, and DMA resources. The resources are allocated by the BIOS during POST configuration and are set to be compatible with common PC/AT settings. You can change some parameters of the parallel-communication interface through the BIOS setup.

5.6. USB

Three USB host controllers are on the Intel® 82801DB south bridge device. The USB controllers comply with both versions 1.1 and 2.0 of the USB standard and are backward compatible.

Only two ports are available. The USB controllers are PCI bus devices. The BIOS allocates required system resources during configuration of the PCI bus.

5.7. Ethernet

The Ethernet interface is based on the Intel® 82562 Fast Ethernet PCI controller. This 32-bit PCI controller is a fully integrated 10/100BASE-TX LAN solution. The Ethernet interface requires an external transformer. The Ethernet interface is a PCI device. The BIOS setup automatically configures it during configuration of the PCI device.

5.8. VGA Output

The MDR12 graphics subsystem is integrated in the Intel® 852GM/855GME northbridge. It has the following features:

- Display image rotation
- Graphics core frequency up to 250 MHz
- Display core frequency at 133 MHz, 200 MHz or 250 MHz
- Render core frequency at 100 MHz, 133 MHz, 166 MHz, 200 MHz, 250 MHz
- 2D graphics engine
- Improved hardware motion compensation for MPEG2
- Software DVD at 60 Fields/second and 30 frames/second full screen
- Support for standard definition DVD (i.e. NTSC pixel resolution of 720x480, etc.) quality encoding at low CPU utilization
- Single- or dual-channel LVDS panel support up to UXGA panel resolution with frequency range from 25 MHz to 112 MHz (single channel/dual channel)
- 3D graphics engine
- 3D setup and render engine
- Zone rendering
- High quality performance texture engine
- Viewpoint transform and perspective divide
- It can drive cathode ray tube (CRT) monitors and flat-panel displays. You can program the graphics controller to use up the 32MB of unified memory architecture (UMA) memory as its video memory. Additional memory may be assigned by the Intel Graphics Driver

- Max. resolution CRT QXGA 2048x1536
- Max. resolution LCD UXGA 1600x1200 (4G colors)
- Bits/Pixels supported 1x18 bit, 2x18 bit, 1x24 bit*), 2x24 bit

5.9. Audio

The MDR audio controller is integrated in the Intel® 82801DB southbridge, the external audio codec is a AC97 compatible VIA VT1618 .

The audio controller is a PCI bus device. The BIOS allocates required system resources during configuration of the PCI device.

5.10. Cardbus

The Cardbus controller supports PCMCIA (16 Bit) and PC-Card (32 Bit) devices.

5.11. IDE Port

The IDE host adapter is capable of UDMA operation. Please refer to the IDE specifications documents for additional information.

Primary and secondary IDE host adapters are PCI bus devices. They are configured by the BIOS during PCI device configuration. You can disable them in setup. Resources used by the primary and secondary IDE host adapters are compatible with the PC/AT.

5.12. Mini PCI Bus

The implementation of this subsystem complies with the miniPCI specification. Refer to the documentation for additional information.

6. Open/close the housing

Warning!

Take care that power is off while doing some handlings in the open housing.

7. Start Up

The MDR will start up by connecting the power cable to the power connector on the rear side. Take care that the cable is supplied with power.

The MDR will boot up the built-in PC.

7.1. Ambient Light Control

The brightness of the display is controlled with an ambient light sensor, which is behind the little hole at the top of the front. The characteristics can be programmed.

See section 10.

8. Technical Data

Product	**MDR-12**
LCD Module Size	12,1“
Visual Characteristics	
Panel Resolution	800x600 1024x768 (optional)
Response time	Tg = 6,5ms
Contrast ratio	600:1
Brightness	400 cd/m²
Standard Input/Output Capabilities	
Video (S-Video, Composite)	optional
Standard VGA Output	Yes
Control	
IR Remote	no
Control over RS232	Yes / Additional Software Required
Controled parameters	
- backlight brightness	Yes
- backlight on/off	Yes
Software upgrade	Yes
Watchdog	Yes
Ambient Light Sensing	Yes
Over Heating Protection	Yes (Option)

Other Specifications	
Protective Glass Cover	Yes, Anti-glare
Embedded PC	Yes
System for 24H/7D usage	Yes
Operating Temperature Range	-10 to 60 degree Celsius at 10-90% Hum.
Product Warranty	18 months from the delivery date (Return To Base)
Embedded PC Specification	
CPU Performance	Celeron 600 MHz Celeron 1 GHz
Memory	256MB RAM (up to 1 Gbyte optional)
LAN	10/100 Base-T
USB	2x USB 2.0
Serial Ports	1x RS-232
Parallel	1x LPT (Optional)
LVDS	1x LVDS, 2ch, 24 Bit
IDE	2x enhanced IDE-Ports, SATA
Sound Audio	AC' 97
Mass Storage	Hard Disk 40GB CFC-Card slot
Operating System	Windows XP
Power Supply	
Input Voltage [V]	8-28 VDC
Input Current [A]	Ca. 900 mA
Inrush Current [A]	tbd

Mechanical Specification	
Fan with minimal noise	No
Security	Yes
Housing	Aluminium with Powder Coating
Size of Monitor (WxHxD)	310x250x52
Size of Packaging (WxHxD)	400x300x100
Weight of Monitor with Protection Glass (NET)	3 Kg
Weight including Packaging (Cross)	4 kg
Mounting	
Fixation Points on the back of the monitor	Vesa 75
Landscape or Portrait mode use	Yes
Classification	
Classification	IP54 Compliant
CE, UL and FCC certified	CE, FCC, prepared for UL

9. PC Specifications

9.1. Functional Specifications

- **Prozessor**
  - Intel® Pentium® M Processor 1.4 GHz
  - Intel® Celeron® M Processor 600 MHz and 1.0 GHz
- Bus
  - 400 MHz CPU bus
  - 200/266 MHz memory bus
- **Chipset: Intel® 852GM (Celeron M 600MHz), 855GME (others)**
- **Super I/O: Winbond W83627HG connected by LPC interface**
- **Cache: On-die Second level 2 MB(1.4 GHz) 512 kB (Celeron M 600 MHz, 1.0 GHz)**
- **Memory**
  - One 200-pin DDR-SO-DIMM
  - 2.5V PC-1600/2100 unbuffered DDR-SDRAM, up to 1GB
- **Two Serial Ports (COM1 and COM2)**
  - Transistor-to-transistor (TTL) signals only
  - Standard RS232C
  - 16550 compatible
- **Infrared Device Association (IrDA) interface**
- **One Parallel Port (LPT1)**
  - Enhanced Parallel Port (EPP) and Extended Capabilities Port (ECP) with bi-directional capability
- **Floppy**
  - 3.5” standard drive via Flex Foil adapter
- **Enhanced Intelligent Drive Electronics (EIDE): Two Peripheral Component Interconnect (PCI) Bus Master IDE ports (up to three devices) support**
  - Ultra Direct Memory Access (DMA) mode
  - Programmed Input/Output (PIO) modes up to Mode 4 timing
  - Multiword DMA Mode 0,1,2 with independent timing

Universal Serial Bus (USB)

- Three USB 1.1/2.0 ports (UHCI and EHCI)
- USB legacy keyboard support
- USB floppy, CD-ROM, Hard drive, and Memory stick boot support

Integrated Ethernet: Intel 82562 10/100 Mbps Fast Ethernet controller

- Integrated, WfM 2.0 and IEEE 802.3 compliant; 10BASE-T and 100BASE-TX compatible PHY

Onboard video graphics array (VGA): Integrated in Intel 852GM/855GME

- Graphics memory controller hub with Intel Extreme Graphics 2 technology
- Up to 64 MB Video RAM (UMA)
- Cathode ray tube (CRT) and low voltage differential signaling (LVDS) liquid-crystal dis- play (LCD) interfaces

Audio: Integrated in Intel 82801DB southbridge

- AC97, Windows Sound System™ compatible

Video In

- Conexant Video Broadcast decoder CX23883

BIOS: Phoenix, 1MB Flash-BIOS in Firmware Hub Flash Memory

- NV-EEPROM for CMOS-setup retention without battery

PS/2 keyboard controller

PS/2 mouse interface

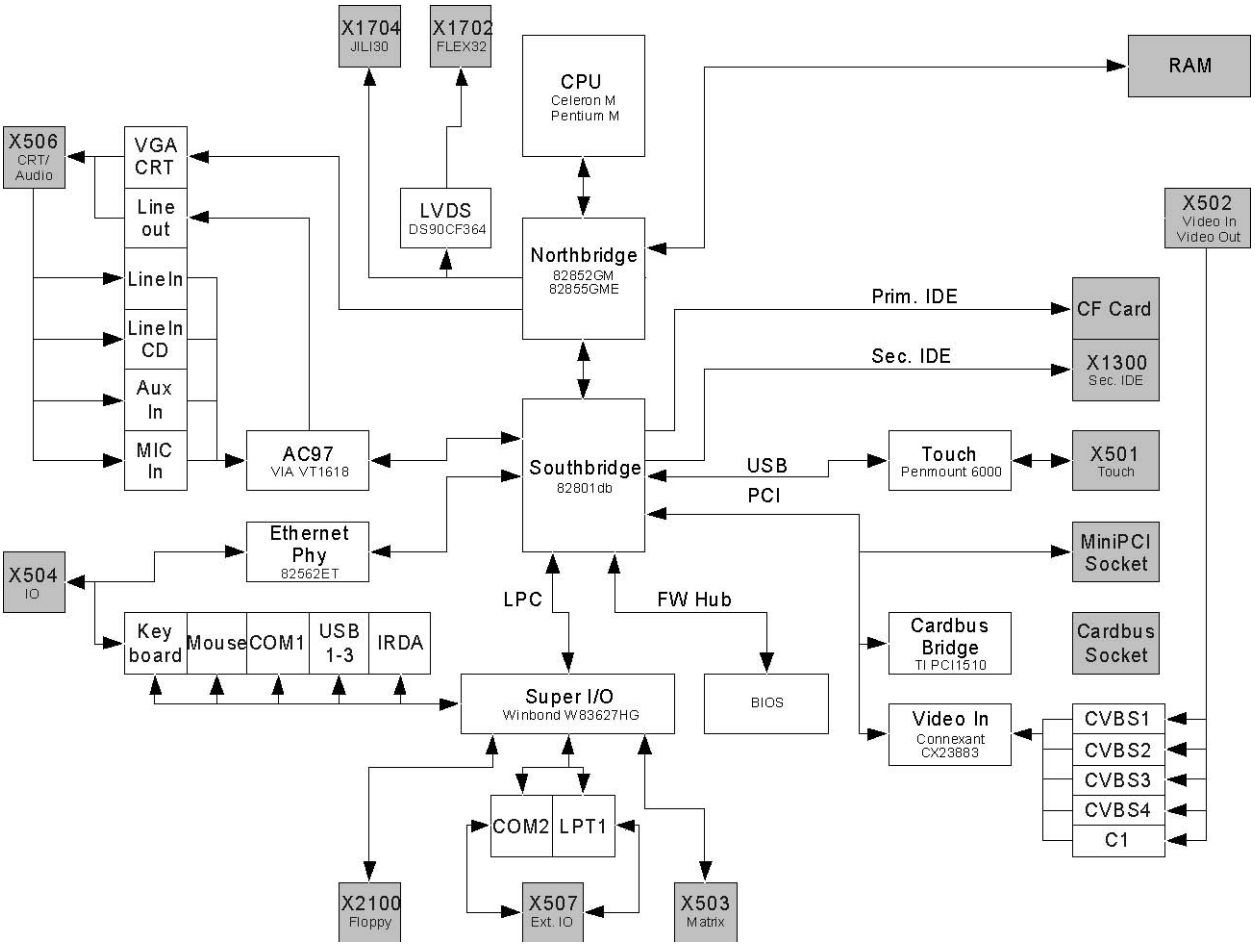
Watchdog timer (WDT) integrated in the Super I/O (Winbond 83627HG)

Real-time clock (requires external battery)

Power Management

- ACPI support
- Suspend to RAM (S3) support

9.2. Blockdiagramm



9.3. BIOS Operation

The CPU is equipped with a Phoenix BIOS, which is located in an onboard Flash EEPROM. The device has 8-bit access. Faster access (16 bit) is provided by the shadow RAM feature. You can update the BIOS using a Flash utility.

9.3.1. Determining the BIOS Version

To determine the PhoenixBIOS version, immediately press the Pause key on your keyboard as soon as you see the following text display in the upper left corner of your screen:

9.3.2. Setup Guide

```
PhoenixBIOS 4.0 Release 6.1 Copyright 1985-2006
Phoenix Technology Ltd.All Rights ReservedKontron®
BIOS Version <ePanel PM/CM R110>© Copyright 2002-
2007 Kontron Embedded Modules GmbH
```

The PhoenixBIOS Setup Utility changes system behavior by modifying the BIOS configuration. The setup program uses a number of menus to make changes and turn features on or off.

9.3.2.1. Start Phoenix BIOS Setup Utility

To start the PhoenixBIOS setup utility, press <**F2**> when the following string appears during bootup.

```
Press <F2> to enter Setup
```

The Info Menu then appears.

The **Setup Screen** is composed of several sections:

Setup Screen	Location	Function
Menu Bar	Top	Lists and selects all top level menus.
Legend Bar	Bottom	Lists setup navigation keys.
Item Specific Help Window	Right	Help for selected item.
Menu Window	Left Center	Selection fields for current menu.
General Help Window	Overlay (center)	Help for selected menu.

Menu Bar

The menu bar at the top of the window lists different menus. Use the left/right arrow keys to make a selection.

Legend Bar

Use the keys listed in the legend bar on the bottom to make your selections or exit the current menu. The table below describes the legend keys and their alternates.

Key	Function
<F1> or <Alt-H>	General Help window.
<Esc>	Exit menu.
← or → Arrow key	Select a menu.
↑ or ↓ Arrow key	Select fields in current menu.
<Tab> or <Shift-Tab>	Cycle cursor up and down.
<Home> or <End>	Move cursor to top or bottom of current window.
<PgUp> or <PgDn>	Move cursor to next or previous page.
<F5> or <->	Select previous value for the current field.
<F6> or <+> or <Space>	Select next value for the current field.
<F9>	Load the default configuration values for this menu.
<F10>	Save and exit.
<Enter>	Execute command or select submenu.
<Alt-R>	Refresh screen.

Selecting an Item

Use the ↑ or the ↓ key to move the cursor to the field you want. Then use the **+** and – keys to select a value for that field. To **Save Value** commands in the **Exit** menu save the values displayed in all the menus.

Displaying Submenus

Use the ← or → key to move the cursor to the submenu you want. Then press <Enter>. A pointer (▯) marks all submenus

Item Specific Help Window

The Help window on the right side of each menu displays the Help text for the selected item. It updates as you move the cursor to each field.

General Help Window

Pressinf <F1> or <ALT-F1> on a menu brings up the General Help window that describes the legend keysand their alternates. Press <Esc> to exit the Genral Help window.

9.3.3. Info Menu

This screen shows a set of informational items, which might be handy e.g. in case you need some kind of support.

9.3.4. Main Menu

Feature	Option	Description
System Time	HH:MM:SS	Set system time. Use <Enter to move to MM or SS.
System Date	MM/DD/YYYY	Set system date. Use <Enter to move to DD or YYYY.
Legacy Diskette A	360 kB, 5 ¼ " 1.2 MB, 5 ¼ " 720 kB, 3 ½ " 1.44/1.25 MB, 3 ½ " 2.88 MB, 3 ½ " **Disabled**	Select floppy type. Note that 1.25 MB 3 ½ " references a 1024 byte/sector Japanese media format. The 1.25 MB 3 ½ " diskette requires a 3-Mode floppy-disk drive.
‣ Compact Flash	Autodetected drive	Displays result of PM autotyping.
‣ Secondary Master	Autodetected drive	Displays result of SM autotyping.
‣ Secondary Slave	Autodetected drive	Displays result of SS autotyping.
Smart Device Monitoring	Disabled **Enabled**	IDE Failure Prediction.Turns on Self-Monitoring Analysis-Reporting Technology, which monitors the condition of the hard drive and reports when a catastrophic IDE failure is about to happen.

9.3.4.1. Master or Slave Submenus

Feature	Option	Description
Type	None IDE Removable ATAPI Removable CD-ROM Other ATAPI User **Auto**	None = Autotyping is not able to supply the drive type or end user has selected None, disabling any drive that may be in-stalled. User = You enter parameters of hard-disk drive installed at this connection. Auto = Autotypes hard-disk drive installed here. CD-ROM = A CD-ROM drive is installed here. ATAPI Removable = Removable disk drive is installed here.
Cylinders	1 to 65,536	Number of cylinders.
Heads	1 to 256	Number of read/write heads.
Sectors	1 to 63	Number of sectors per track.
Maximum Capacity	N/A	Displays the calculated size of the drive in CHS
Total Sectors	N/A	Number of total sectors in LBA mode
Maximum Capacity	N/A	Displays the calculated size of the drive in LBA
Multi-Sector Transfer	Disabled 2 sectors 4 sectors 8 sectors 16 sectors	Any selection except Disabled determines the number of sectors transferred per block. Standard is 1 sector per block.
LBA Mode Control	Disabled Enabled	Enabling LBA causes Logical Block Addressing to be used in place of CHS.
32-Bit I/O	**Disabled** Enabled	Enables 32-bit communication between CPU and IDE card. Re-quires PCI or Local Bus.
Transfer Mode	Standard Fast PIO 1 Fast PIO 2 Fast PIO 3 Fast PIO 4 FPIO 3**/** DMA 1 FPIO 4**/** DMA 2	Selects the method for transferring the data between the hard disk and system memory.
Ultra DMA Mode	Disabled Mode 0 Mode 1 Mode 2 Mode 3 Mode 4 Mode 5	Selects the UDMA mode used for moving data to/from the drive. Autotype the drive to select the optimum transfer mode.
SMART Device Monitoring	**Disabled** Enabled	Shows if SMART Device monitoring is supported by the drive.
Hard Disk Pre-Delay	**Disabled 3 Seconds 6 Seconds 9 Seconds 12 Seconds 15 Seconds 21 Seconds 30 Seconds**	Adds a delay before the first access of a hard disk by the BIOS. Some hard disks hang if accessed before they have initialized themselves. This delay ensures the hard disk has initialized after power up, prior to being accessed.

9.3.5.

Advanced Menu

Feature	Option	Description
▸ Advanced Chipset Control	sub menu	Opens Advanced Chipset Control sub menu.
▸ PCI/PNP Configuration	sub menu	Opens PCI/PNP Config sub menu.
▸ Memory Cache	sub menu	Opens Cache Control sub menu.
▸ I/O Device Configuration	sub menu	Opens Peripheral Config sub menu.
▸ Keyboard Features	sub menu	Opens Keyboard Features sub menu.
▸ Hardware Monitor	sub menu	Shows hardware monitor current state.
▸ Watchdog Settings	sub menu	Opens Watchdog Config sub menu.
▸ Display Control	sub menu	Opens Display Control sub menu
▸ Miscellaneous	sub menu	Opens sub menu with miscellaneous options.

9.3.5.1. Advanced Chipset Control Submenu

Feature	Option	Description
Graphic Memory	1MB **8MB** 16MB 32MB	Select the amount of main memory that the Internal Graphics Device will use.
Max. suported Mem Freq	DDR200 DDR266 **DDR333**	Use this node to limit the supported memory frequencies.
Serial Interrupt Mode	**Quiet** Continuous	Sets the mode for the Serial Irq, Continuous mode is advisable with high interrupt traffic on the Serial IRQ line. This inclues all ISA, LPC and SIO devices

9.3.5.2. PCI/PNP Configuration Submenu

Feature	Option	Description
PnP OS installed	No **Yes**	Select the operating system installed on your system which you will use most commonly. If your system has a PnP OS (e.g. Win9x) select Yes to let the OS configure PnP devices not required for booting. No allows the BIOS to configure them. Note: An incorrect setting can cause some operating systems to display unexpected be- haviour.
Reset Configuration Data	**No** Yes	Yes erases all configuration data in ESCD, which stores the configuration settings for plug-in devices. Select Yes when required to restore the manu-facturer's defaults.
Secured Setup Configuration	**Yes** No	Yes prevents a Plug and Play OS from changing system settings.
‣ PCI Device, miniPCI Slot	sub menu	Opens sub menu to configure miniPCI device
CardBus Controller	**Enabled** Disabled	Enable/Disable the Slot. Setting item to "Disabled" will remove the Slot from PCI Config Space.
miniPCI Slot IRQ line	Disabled **Auto** IRQ3, 4, 5, 7, 9, 10, 11, 12, 14,15	PCI devices can use hardware interrupts called IRQ´s. A PCI device cannot use IRQ´s already in use by PCMCIA devices.
Onboard LAN IRQ line	see above	see above
Onboard USB EHCI IRQ line	see above	see above
Assign IRQ to SMB	Disabled **Enabled**	Determines whether the onchip SMBus host controller gets an IRQ assigned.

9.3.5.3. PCI Device, miniPCI Slot Submenu

Feature	Option	Description
Enable Slot	**Enabled** Disabled	Enable/Disable the Slot. Setting item to "Disabled" will remove the Slot from PCI Config Space.
Option ROM Scan	Disabled **Enabled**	Initialize device expansion ROM.
Enable Master	**Disabled** Enabled	Enables device in slot as a PCI bus master, not every device can function as a master. Check device documentation.
Latency Timer	**Default** 20h, 40h, 60h, 80h, A0h, C0h, E0h	Minimum guaranteed time slice allocated for bus master in units of PCI bus clocks. A high-priority, high-throughput device may benefit from a greater value.

9.3.5.4.

Memory Cache Submenu

Feature	Option	Description
Memory Cache	Disabled **Enabled**	Enables or Disables the L2 cache.
Cache System BIOS area	Uncached **Write Protect**	Controls caching of System BIOS area.
Cache Video BIOS area	Uncached **Write Protect**	Controls caching of Video BIOS area.
Cache Base 0 – 512k	Uncached Write Through Write Protect **Write Back**	Controls caching of 512k base memory.
Cache Base 512 – 640k	Uncached Write Through Write Protect **Write Back**	Controls caching of 512k – 640k base memory.
Cache Extended Base / Extended Memory area:	Uncached Write Through Write Protected **Write Back**	Controls caching of system memory below 640k / above 1MB.
D000 – D3FF D400 – D7FF D800 – DBFF DC00 – DFFF	**Disabled** Write Through Write Protected Write Back	Disabled: block is not cached. Write Through: Writes are cached and sent to main memory at once. Write Protect: Writes are ignored. Write Back: Writes are cached, but not sent to main memory until necessary.

9.3.5.5. I/O Device Configuration Submenu

Feature	Option	Description
Local Bus IDE adapter	Disabled Primary Secondary **Both**	Enables the integrated local bus IDE device.
‣ USB Options	sub menu	USB Configuration
AC97 Audio Controller	**Disabled** Enabled	Enable the AC97 Audio device. This Setup Item will have no effect if an AC97 Audio MDC is not pre-sent.
‣ LAN Options	sub menu	LAN Configuration
‣ SIO Options	sub menu	SIO Configuration

Note:	* The USB ports are multiplexed between UHCI and EHCI. Ports are routed to EHCI if an USB 2.0 high-speed device is connected and an EHCI driver is loaded. If you want to use the USB boot feature, enable USB BIOS Legacy Support.

9.3.5.5.1.

USB Options Submenu

Feature	Option	Description
USB UHCI Host Controller 1	**Enabled** Disabled	Enable/ Disable UHCI 1 HC = USB ports 0 and 1.
USB UHCI Host Controller 2	**Enabled** Disabled	Enable/ Disable UHCI 2 HC = USB ports 2 and 3.
USB touch Controller	**Enabled** Disabled	Enable/ Disable USB touch Controller.
USB EHCI Host Controller *	**Disabled** Enabled	Controls USB 2.0 functionality.*
Legacy USB Support	Disabled **Enabled**	Enable support for USB keyboard and mice and boot from USB mass storage devices.
EHCI Legacy Support	Disabled **Enabled**	This Enables EHCI Legacy Support, Disable this if you have a OS that doen't have either acpi support or an EHCI driver(not an USB2 driver) installed.

9.3.5.5.2. LAN Options Submenu

Feature	Option	Description
LAN MAC address (ETH1)		Shows MAC address
Onboard LAN Controller	Disabled **Enabled**	Enables the ICH4 internal LAN controller. Setting item to 'Disabled' will remove the LAN from PCI config space.
Onboard LAN PXE ROM	**Disabled** Enabled	Enables the remote boot BIOS extension for the onboard LAN controller.
Enable WOL	OS control Enabled Disabled	This item controls the activation of the PME line which can be used to wake the system via LAN. 'OS control' means that BIOS won't interfere with the settings made in an ACPI OS.

9.3.5.5.3. SIO Options Submenu

Feature	Option	Description
Onboard FDC	Disabled **Enabled**	Enables the onboard FDC controller.
Serial port A Serial port B	**Disabled (port B)** Enabled **Auto (port A)**	Disabled turns off the port. Enabled requires end user to enter the base I/O ad- dress and the IRQ. Auto makes the BIOS configure the port.
*Onboard LPT	Disabled Enabled Auto **OS Controlled**	Disabled turns off the port. Enabled requires end user to enter the base I/O ad- dress and the IRQ. Auto makes the BIOS configure the port.
*Mode	Output only **Bi-directional** EPP ECP	Set the mode for the parallel port.

9.3.5.6.

Keyboard Features Submenu

Feature	Option	Description
Numlock	Auto **On** Off	On or Off turns NumLock on or off at bootup. Auto turns NumLock on if it finds a numeric key pad.
Key Click	**Disabled** Enabled	Turns audible key click on.
Keyboard auto-repeat rate	**30/sec**,26.7/sec, 21.8/sec, 13.3/sec, 10/sec, 6/sec, 2/sec	Sets number of times to repeat a keystroke per second if you hold the key down.
Keyboard auto-repeat delay	¼ sec, ½ **sec**, ¾ sec, 1 sec	Sets delay time after the key is held down before it begins to repeat the keystroke.
PS2 Scanner Workaround	**Disabled** Enabled	This is a workaround for some PS2 scanners that require to be enabled after a reset.

9.3.5.7. Hardware Monitor Submenu

This submenu shows the current voltages and temperatures of the system.

Vcc (3.3V) Voltage	3.3V power plane
CPU Core Voltage	Core voltage (depends on CPU)
5Vsb Voltage	5V Standby plane
Battery Voltage	Backup battery voltage
CPU Temperature	Temperature of CPU die
CPU Fan Speed	Speed of CPU Fan

9.3.5.8. Watchdog Settings Submenu

Feature	Option	Description
Mode	**Disabled** Reset NMI	Select watchdog operation mode.
Delay	1s, 5s, 10s, **30s**, 1min, 5.5min, 10.5min, 30.5min	The time until the watchdog counter starts counting. Useful to handle longer boot times.
Timeout	1s, 5s, 10s, **30s**, 1min, 5.5min, 10.5min, 30.5min	Maximum trigger period.

9.3.5.9.

Display Control Submenu

Feature	Option	Description
Display Mode	**CRT only** LFP only CRT+LFP	Select the display mode.
JDA Revision	1.4	Displays the revision of the data area image.
Flat Panel Type	VGA 1x18 SVGA 1x18 XGA 1x18 XGA 1x24 XGA 2x18 SXGA 2x24 UXGA 2x18 Enter PAID Enter FPID **Auto**	Select Auto to let the BIOS automatically detect the panel type or use one of the predefined fixed panel types.
Flat Panel Scaling	Centered **Stretched**	Stretched expands a low resolution video mode to full screen on a higher flat panel resolution.
Flat Panel backlight	0 – 255 **128**	Adjust level of backlight brightness

9.3.5.10. Miscellaneous Submenu

Feature	Option	Description
Floppy Check	**Disabled** Enabled	Enabled verifies floppy type on boot; disabled speeds boot.
Summary Screen	**Disabled** Enabled	If enabled, a summary screen is displayed just before booting the OS to let the end user see the system configuration.
QuickBoot Mode	Disabled **Enabled**	Allows the system to skip certain tests while booting. This will decrease the time needed to boot the system.
Extended Memory Testing	Normal **Just zero it** None	Determines which type of tests will be performed on memory above 1MB. The option Normal is not visible if QuickBoot is enabled.
Dark Boot	**Disabled** Enabled	If enabled, system comes up with a blank screen instead of the diagnostic screen during bootup.
Halt On Errors	**Yes** No	Determines if post errors cause the system to halt.
PS/2 Mouse	**Autodetect** Enabled Disabled	Selecting Disabled prevents any installed PS/2 mouse from functioning, but frees up IRQ12. Selecting Autodetect frees IRQ12 if no mouse was detected.
Large Disk Access Mode	**DOS** Other	Select DOS if you have DOS. Select Other if you have another OS such as UNIX. A large disk is one that has more than 1024 cylinders, more than 16 heads or more than 63 sectors per track.
Spread Spectrum	**Disabled** Enabled	Controls the spread spectrum feature of the clock generator.

9.3.6.

Security Menu

Feature	Option	Description
Set User Password	Up to seven alphanumeric characters	Pressing <Enter> displays the dialog box for entering the user password. In related systems, this password gives restricted access to setup.
Set Supervisor Password	Up to seven alphanumeric characters	Pressing <Enter> displays the dialog box for entering the user password. In related systems, this password gives full access to setup.
Diskette access	User **Supervisor**	Enabled requires supervisor password to access floppy disk.
Fixed disk boot sector	**Normal** Write protected	Write protect the boot sector on the hard disk for virus protection. Requires a password to format or Fdisk the hard disk.
Virus check reminder System backup reminder	**Disabled** Daily Weekly Monthly	Displays a message during bootup asking (Y/N) if you backed up the system or scanned for viruses. Message returns on each boot until you respond with 'Y'. Daily displays the message on the first boot of the day, Weekly on the first boot after Sunday, and Monthly on the first boot of the month.
Password on boot	**Disabled** Enabled	Enables password entry on boot.

Note:	Enabling Supervisor Password requires a password for entering Setup. Passwords are not case sensitive. User and Supervisor passwords are related. A User password is possible only if a Supervisor password exists.

9.3.7.

Power Menu

A power management system reduces the amount of energy used after specified periods of inactivity. Use the **Advanced Options** menu to specify whether an activity can terminate a Standby or Suspend state and restore Full On.

Feature	Option	Description
Enable ACPI	No **Yes**	Enables/Disables ACPI BIOS (Advanced Configuration and Power Interface). IRQ9 is used for SCI (System Control Interrupt). Do not use for ISA bus devices.
ACPI Control	sub menu	These items will control selective functionality when an ACPI OS is loaded.
Thermal Management	sub menu	
Power Savings	**Disabled** Customized Maximum Power Saving Maximum Performance	Maximum options select predefined values. Select Customized to make your own selections from the following fields. Disabled turns off all power management.
Hard Disk Timeout	**Disabled**, 10 sec – 15 min	Inactivity period of hard disk required before standby (motor off).
Auto Suspend Timeout	**Off**, 5min, 10min, 15min, 20min, 30min, 40min, 60min	Inactivity period required after Standby to Suspend mode (maximum power shutdown).
Resume on Modem Ring	**Off** On	Enabled wakes the system on incoming calls detected by modem (RI).
Resume on Time	**Off** On	Enabled wakes the system at a specific time.
Resume Time	00:00:00	Specify the time when the system is to wake up. <Tab>, <Shift-Tab> or <Enter> selects field.
Power Supply	**ATX** AT	Choose the connected power supply, ATX or AT.
Power Button Function	Power Off **Sleep**	Determines if the system enters suspend or soft off when the power button is pressed.

Note:	* The ePanel (Celeron CPU) default setting for this value is TM1 because this ePanel does not support TM2.

9.3.7.1.

ACPI Control sub menu

Feature	Option	Description
APIC – IO APIC Mode	**Disabled** Enabled	This item is valid only for Windows XP. Also, a fresh install of the OS must occur when APIC Mode is desired. Test the IO APIC by setting an item to Enabled. The APIC Table will then be pointed to by the RSDT, the Local APIC will be initialized, and the proper enable bits will be set in IHC4M.
Native IDE Support	**Disabled** Enabled	Enable Native IDE support for WINXP by setting this item. The NATA Package will be created if this item is set to Enabled. Changing this item will have no effect in WIN98, WINME, or WIN2K.
Deepest sleep state for standby	**None** **S1** **S3**	This option chooses S3 saves more power than S1 and choosing 'None'will disable standby in the OS. Please be sure your board supports the appropriate Sleep state when making this choice. S3/S1 offers the OS the

9.3.7.2. Thermal Management sub menu

Feature	Option	Description
* Automatic Thermal Monitor Control Circuit	Disabled TM1 **TM2**	Enables the thermal control circuit (TCC) of the thermal monitor feature of the Pentium-M CPU. TM1 = 50% duty cycle TM2 = Geyserville III Automatic TTC must be enabled to ensure that the processor operates within specification.
Passive Cooling Trip Point	**Disabled** 40 C – 100 C	Determines the temperature of the ACPI Passive Trip Point, the point at which the OS will turn on/off CPU clock throttling.
Passive TC1 Value	**1**, 2, 3, …15**,** 16	Determines the TC1 (temperature coefficient 1) value for the ACPI passive cooling formula.
Passive TC2 Value	1, 2, 3, 4, **5**, …15**,** 16	Determines the TC2 (temperature coefficient 2) value for the ACPI passive cooling formula.
Passive TSP Value	2, 4, 6, 8, **10**, … 28, 30	Determines the Tsp (sampling period) value for the ACPI passive cooling formula.
Critical Trip Point	40 C – 110 **C 100** °C	This value controls the temperature of the ACPI Critical Trip Point- the point at which the OS will shut the system off.
Active Trip Point	**Disabled** 40 C – 100 C	Determines the temperature of the ACPI Active Trip Point, the point at which the OS will turn on/off the CPU fan.

9.3.8.

Boot Menu

9.3.8.1. MultiBoot

Multiboot allows you to select the following boot devices:

- Hard disk
- Floppy disk
- CD-ROM
- Network card

You can make the selections from Setup, or by selecting the boot device in the BootFirst Menu.

MultiBoot consists of the 2 menus:

- Setup Boot Menu
- Boot First Menu

9.3.8.2. The Setup Boot Menu

This menu allows selecting the order of the devices from which the BIOS attempts to boot the OS. During POST, if BIOS is unsuccessful at booting from one device, it will try the next one on the list.

The Boot Menu shows two lists, the boot priority list and the exclude from boot order list. The sample below shows the default configuration.

Boot priority order:	Item Specific Help
1. IDE0: <primary master device> 2. IDE2: <secondary master device> 3. IDE3: <secondary slave device> 4. IDE CD: <IDE CD-ROM> 5. Legacy Floppy Drives 6. USB FDC: <USB Floppy Drive> 7. PCI BEV: <PCI LAN device> 8. **Exclude from boot order:** USB HDD: <USB Hard Drive device> USB CDROM: <USB CD-ROM>	Keys used to view or configure devices: Up and Down arrows select a device. <+> and <-> moves the device up or down. <f> and <r> specifies the device fixed or removable. <x> exclude or include the device to boot. <Shift + 1> enables or disables a device. <1 – 4> Loads default boot sequence.

9.3.8.3.

Boot First Menu

Display the **Boot First Menu** by pressing <**Esc**> during POST. In response, the BIOS displays the message `Entering Boot Menu` and then displays the Boot Menu at the end of POST.

Use the menu to select one of the following options:

- Override the existing boot sequence (for this boot only) by selecting another boot device. If the specified device does not load the OS, the BIOS reverts to the previous boot sequence.
- Enter Setup.
- Press <**Esc**> to continue with the existing boot sequence.

9.3.9. Exit Menu

The following sections describe the five options in **Exit Menu**. Pressing <**Esc**> does not exit this menu. You must select an item from the menu to exit.

Exit Saving Changes

Saves all selections and exits setup. Upon reboot, the BIOS configures the system according to the Setup selection stored in CMOS.

Exit Discarding Changes

Use this option to exit Setup without storing new selections in CMOS. Previous selections remain in effect.

Load Setup Defaults

Select to display the default values for all Setup menus.

Discard Changes

Discards changes made during a Setup session and revert to values previously saved in CMOS.

Save Changes

Saves all selections without exiting Setup.

10. Dimming Control

10.1. General Description

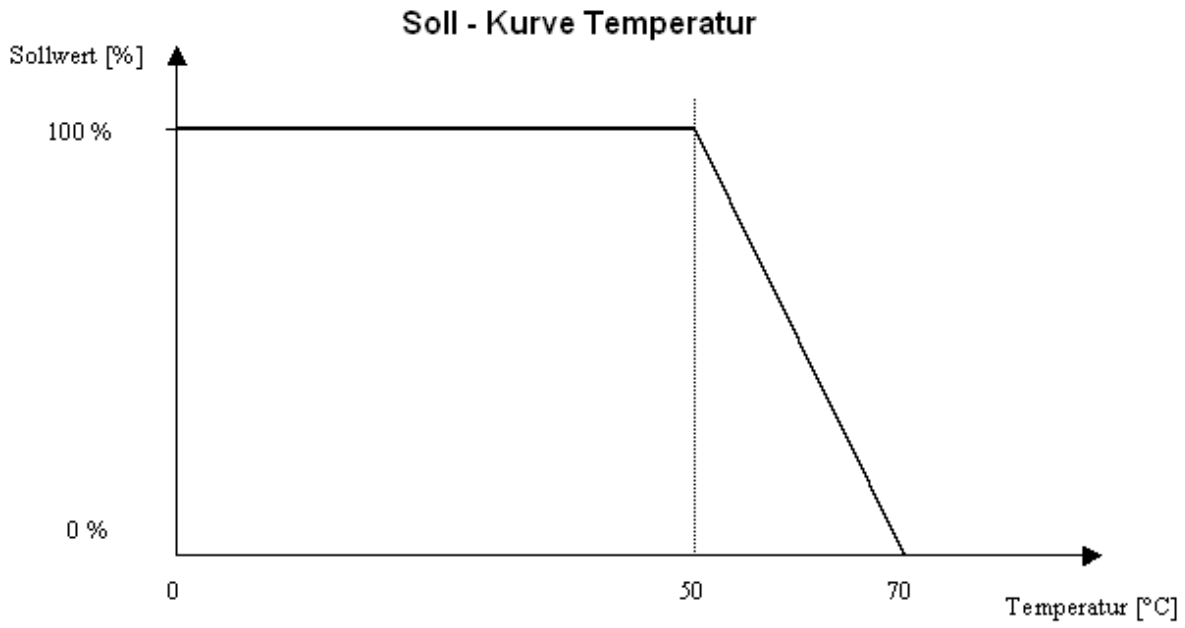
- The tool „Dimming Control“ has the purpose to controll the backlight of TFT displays.
- The backlight can be switched on/off

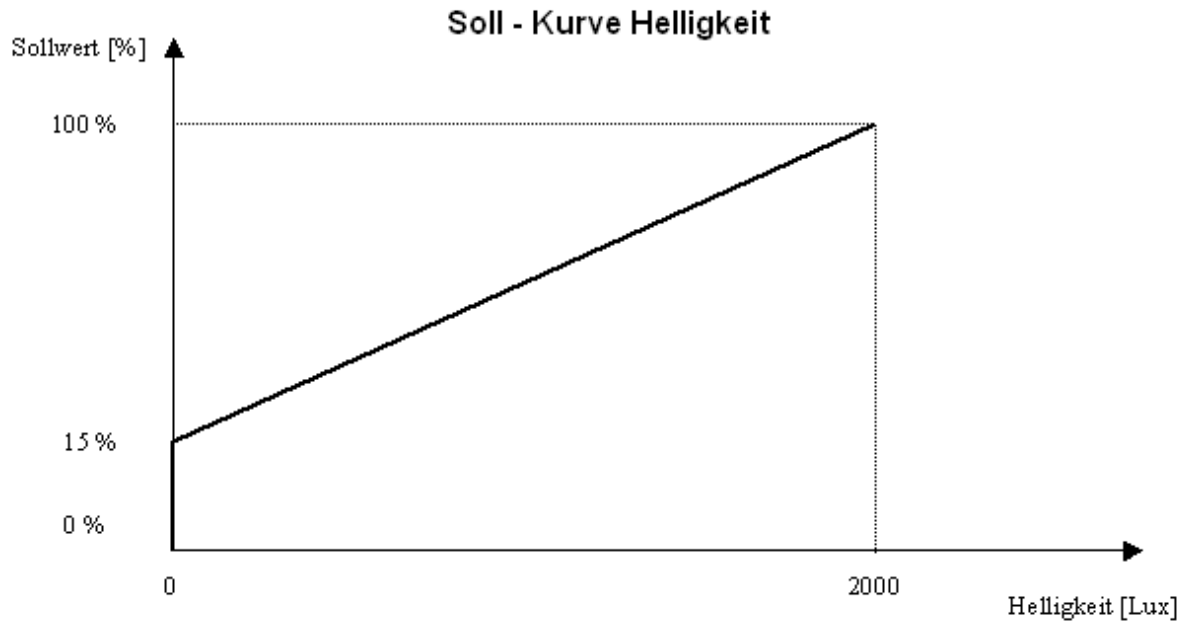
  The brightness of the backlight is controlled with ambient light sensor and an temperature sensor of the cabinet of the monitor.
- The temperatur managment is able to control two fan groups according to the cabinet temperature inside.
- Aall parameters are programmable with an .ini file.
- Communication to an application with message queues

10.2. Target value backlight brigthness

The brightness of the backlight is determined on the following factors:

- Target backlight [%] = minimum value of temperature and ambient light
- The target value for brightness is the cross value of tempearature and ambient light table





10.3. Installation

The Programm „dimming.exe“ runs under Windows 2000/XP.

For install copy the „dimming.zip“ to the target folder and unzip it.

Then run the „install.bat“.

Note : For autostart of dimming control the entries in Autostart necessary.

10.4. Start

To start dimming.exe use the command

dimming –pathini=[Pfad Inidatei]

example:

dimming.exe –pathini=C:\dimming

10.5.

Supervision

10.5.1. Watchdog

- The dimming controll can be supervised with an hardware watchdog.
- To activate the watchdog set the according parameter in „dimming.ini“.
- Additional the supervising intervall can be adjust in the „dimming.ini“

Example: activate the watchdog with 60 seconds

```
//--- Watchdog aktiv ( 1=aktiv / 0=inaktiv )  ---
[WDAKT]
Count=1
Val=1

//--- TimeOut Watchdog ( sec )  ---
[WDTIMEOUT]
Count=1
Val=60,0
```

10.5.2. Heartbeat

- The dimming controll is able to supervise an application software with an heartbeat mechanism .
- active the heartbeat supervisor with an entry in „dimming.ini“.
- additional the supervise time is adjustable in the INI-file.
- The heartbeat mechanism can be deactivate with an message from the application(WM_HEARDBEATOFF) .
- The mechanism starts after reveiving the first heartbeat.
- When the supervice time exceeds the first time, an soft reboot is startet.
- If it is not possible to perform an soft reboot then an hard reset is performed.

Example: activate the heartbeat with 20 seconds supervise time

```
//--- Ueberwachung externe Anwendung aktiv ( 1=aktiv / 0=inaktiv )  ---
[HOSTUEBAKT]
Count=1
Val=1
```

```
//--- Timeout zur Ueberwachung einer externen Anwendung (sec)  ---
[HOSTTIMEOUT]
Count=1
Val=20,0
```

10.6.

Parameter file

The parameter file for Dimming Control is „dimming.ini“

All for Dimming Controll necessary definations are in this INI-file.

Structure of an defination : a. [x] *x:=Section*

b. Count=x *x:=number of entries*

c. Val=x *x:=Werte*

:

10.6.1. Characteristic actual temperatue value

This characteristic adjust the the actual temperature value

Input is the value of the analogic input in digits
Output ist he according temperature in °C

Curve:

```
[TEMPERATUR]                Input                Output
Count=8
Val=-110,0;-55,0            // Wandlerwert = -110,0 / Temperatur = -55,0 Grd Celsius
Val=-50,0;-25,0
Val=-1,0;-0,5
Val=0,0;0,0
Val=1,0;0,5
Val=50,0;25,0
Val=250,0;125,0
Val=0,0;0,0
```

10.6.2. Characteristic DA-converter

This characteristic adjust the output voltage of the DA converter for the backlight inverter. Input = Sollwert [%] / output = Digits DA converter

Curve :

```
[DAWANDLER]                 Input                output
Count=3
Val=0,0;31,0            // Sollwert = 0,0 % / Digits für DA-Wandler = 31,0
Val=100,0;0,0
```

Val=0,0;0,0

10.6.3. Characteristic ambient light / brightness backlight

This caracteristic adjust the value for brightness of backlight depending on the ambient light sensor

Input = ambient light [Lux] / output = value brightness %

Curve:

[LUXSOLLPROZENT] Eingang Ausgang

Count=3

Val=0,0;15,0 // Helligkeit = 0,0 Lux / Sollwert = 15,0 %

Val=1950,0;100,0

Val=0,0;0,0

10.6.4. Characteristic temperature / brightness backlight

This caracteristic adjust the value for brightness of backlight depending on the temperature sensor in the cabinet

Input = temperature [°C] / output = value brightness %

Curve:

[TEMPSOLLPROZENT] Eingang Ausgang

Count=4

Val=0,0;100,0 // 0,0 Grd Celsius / Sollwert = 100,0 %

Val=50,0;100,0

Val=70,0;0,0

Val=0,0;0,0

10.6.5. Backlight power on

This value determine if the backlight is switched on automaticaly after programm start of dimming controll ort he backlight will be switched on by the application via an message (WM_BACKLON).

0 = the backlight stay off until the message „WM_BACKLON“ is send.

1 = the backlight is switched on after programm start of dimming control

Definition:

[GRUNDZUSBL]

Count=1

Val=1

10.6.6. Minimal temperature

The backlight will not switch on of the actual temperature is under this minimal temperature. The backlight will not switch off when the actual temperature become lower then the minimal value during operation.

Definition:

[MINTEMPBLON]

Count=1

Val=-1,0

10.6.7.

Maximum temperature

The backlight is switched of when the temperature comes higher then the maximum temperature.

Definition:

[MAXTEMPBLON]

Count=1

Val=70,0

10.6.8. Fan group 1

For activate the fan group 1

0 = fan group 1 not activ

1 = fan group 1 activ

Definition:

[FAN1AKT]

Count=1

Val=1

10.6.9. Fan group 2

For activate the fan group 2

0 = fan group 2 not activ

1 = fan group 2 activ

Definition:

[FAN2AKT]

Count=1

Val=1

10.6.10. Temperature fan group 1

The fan group 1 is switch on when the actual temperature is higher then defined

Definition:

[TEMPFAN1ON]

Count=1

Val=30,0

10.6.11.

Temperature fan group 2

The fan group 2 is switch on when the actual temperature is higher then defined

Definition:

```
[TEMPFAN2ON]
Count=1
Val=30,0
```

10.6.12. Supervisor for application software

An application software can supervised with the dimming control.

0 = supervisor not activ

1 = supervisor activ

Definition:

```
[HOSTUEBAKT]
Count=1
Val=0
```

10.6.13. Timeout for application software heartbeat

This parameter defines the the intervall time the application software has to send an heartbeat (WM_HEARTBEAT).

Definition:

```
[HOSTTIMEOUT]
Count=1
Val=20,0
```

10.6.14.

Watchdog activ

Activate the watchdog

0 = Watchdog not active

1 = Watchdog activ

Definition:

[WDAKT]

Count=1

Val=0

10.6.15. Timeout watchdog

Intervall time of watchdog. The CPU will be reset if the watchdog will not triggered from Dimming Control

Definition:

Count=1

Val=180,0

10.6.16. Debug-Mode

Print of general values on the console.

0 = no print / 1 = print

Notice: not possible under Windows (Linux only)

10.6.17. Debug-Mode SM-Bus

Print of SM-Bus value on the console.

0 = no print / 1 = print

Notice: not possible under Windows (Linux only)

10.6.18.

Host name

The host name of the application software for exchange of messages

Definition:

```
[Hostname]
Text=testprogramm
```

10.7.

Messages

The Dimming Control communicate with the application software with Windows-Messages of the class *CWnd*.

The name of the application software has to set in the section [Hostname] of INI-file *dimming.ini*.

10.7.1. Messages - Commands

10.7.1.1. Application → Dimming Control

Message	Description
WM_BACKLON	Switch on backlight
WM_BACKLOFF	switch off backlight
WM_WDOGTINI	Activate supervisor for application software
WM_WDOGTMAX	Set watchdog th max. timeout (4 minutes); for service only
WM_HEARTBEAT	Heartbeat for supervisor application software
WM_HEARTBEATOFF	Deactivate supervisor application software
WM_INIDATNEU	Take over dimming.ini parameter after changing from application software
WM_DIMMINGON	Activate backlight dimming
WM_DIMMINGOFF	Deactivate backlight dimming
WM_BRIGHTMAX	Set backlight brigthness to maximum value
WM_BRIGHTMIN	Set backligh brightness to minimum value
WM_ANFSYSZUS	Inquire system status
WM_TEMPBRIGHT	Inquire temperature and ambient light

10.7.1.2. Dimming Control → Application

Message	Description
WM_SYSZUS	System status (wParam = state) / (lParam = Errors)
WM_TEMPBRIGHT	Temperaur u. Helligkeit wParam = Temperatur [Grad Celsius] lParam = Helligkeit [Lux]

10.7.1.3. System status

wParam

Bit	Bedeutung
0	1 = Dimming Control is running
1	1 = error
2	1 = Backlight is on
3	1 = Fan group 1 is on
4	1 = Fan group 2 is on

lParam

Bit	Bedeutung
0	1 = error device ADC
1	1 = error device temperature
2	1 = error device digitale output
3	1 = error hardware initialization
4	1 = error reading hostname in „dimming.ini“
19	1 = backlight off because of low temperature
20	1 = backlight off because of high temperature

Note : after system status is changed from dimming control by itself the message „WM_SYSZUS“ is send automatically.

10.7.1.4. Sample sending commands

command : **WM_BACKLON**

Headerfile: commands.h

1. Registration of the Windows message

   ```
   sDimMessages.WM_BACKLON = RegisterWindowMessage( KENN_STRG_WM_BACKLIGHT_ON );
   ```

2. get handle from application software

   ```
   hSendTo = FindWindow(NULL, Hostname);
   ```

3. send message

   ```
   SendMessage( hSendTo, sDimMessages.WM_BACKLON,  0,  0 );
   ```

11. Maintenance

The MDR is designed and produced according to DIN EN ISO 9000:2000. One of the main development intentions was to minimice service requirements. As a result, with exception changing CMOS-Ram battery and cleaning, no great service is to do.

In case off any error kindly note the remarks below.

To analyze the error please check first all connections and configuration of the software. Don't try to repair the hardware inside.

No warranty if improper operated

11.1. CUSTOMER SERVICE

To get more technical information and help concerning errors on the Panel please contact Rotec customer service.

Tel: **+49 (0)7222 1008 80**

Fax: **+49 (0)7222 1008 10**

E-Mail: **support@rotec.de**

11.2. CLEANING

To clean the surface of the Panel use a soft lint-free cloth. It should be slightly moist with a mild detergent solution or any computer cleaning kit.

Never use alcohol, petroleum-based solvents or aggressive agents to clean the Panel. Also never poor any liquids directly in the Panel PC Box.

To clean the liquid-crystal display (LCD) screen use soft clean lintfree cloth, moist with a mild glass cleaner, and gently wipe the surface. Never apply liquids directly on the screen surface. Do not use paper towels to clean the display screen. Paper can scratch the display touch film.

12. Communications Regulations Information

DECLARATION OF CONFORMITY

According to ISO/IEC Guide 22 and EN 45014

Manufactturer's Name:	ROTEC technology GmbH
Manufacturer's Adress:	Gutenbergstr. 15 D76437 Rastatt Germany

Declares, that the product:

Product Name:	MDR-12

Conforms to the following Product Specifications:

Safety:	IEC 60950-1:2001
	EN60950-1:2001
EMC:	EN 55022:1998+A1:2000+A2.2003 Class B
	EN 55024:1998+A1:2001+A2:2003
	EN 61000-3-2:2000 FCC Part 15-Class B/ICES-003, Issue 4

Supplemental Information:

The product herewith complies with the requirements of the EMC Directive 89/336/EC and carries the CE-marking accordingly. The product is tested in a typical configuration.

This device complies with Part 15 of teh FCC Rules. Operation is subject of teh following two